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ABSTRACT

Unlike initial task interest, very few researchers have investigated the manner in which sources of incentives, i.e., subject-determined versus experimenter-determined, influence the effects of incentives on intrinsic motivation. An experiment in intrinsic motivation was conducted to examine the effects of various sources of incentives and task attractiveness. College students (N=62) volunteered to participate in a purported marketing study involving the rank-ordering of the attractiveness of toys. Dependent measures were latency and duration of self-initiated play assessed during a period in which subjects were unaware of being observed and when incentives were no longer available. Results showed that subjects who received incentives, regardless of the source, initiated play earlier; therefore an enhancement effect rather than an undermining effect of incentives was found. Play was also initiated earlier by subjects in the high attractiveness condition than by those in the low attractiveness condition. The findings suggest that subjects' perceptions of success may mediate the effects of incentives on intrinsic motivation. (Author/JAC)

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Sources of Incentives, Task Attractiveness, and Intrinsic Motivation

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In a typical intrinsic motivation study, the experimental subjects are given incentives for performing an interesting activity while incentives are neither mentioned nor given to control subjects for performing the same activity. The subjects' motivation to perform the activity in the absence of incentives is then assessed by surreptitious observation of self-initiated task performance.

An "undermining" effect would be said to occur when the subjects who received incentives exhibit a longer mean latency and a shorter mean duration of self-initiated play with the activity during the observation period than do the control subjects. On the other hand, an "enhancement" effect would be said to occur when the subjects who received incentives show a shorter mean latency and a longer mean duration of self-initiated play with the activity than do the control subjects who received no incentives.

Lepper, Greene, and Nisbett's (1973) overjustification hypothesis is a widely cited explanation for the undermining effect. According to this hypothesis, an undermining effect occurs when subjects who receive incentives discount their enjoyment of the task in the face of a clear and sufficient external cause for performance of the activity, i.e., the incentive.

Unlike the overjustification hypothesis, Deci's (1975) cognitive evaluation theory specifies the conditions under which one would expect the occurrence of either an undermining or an enhancement effect. Deci argued that incentives will diminish intrinsic motivation if there is a change in perceived locus of causation from internal to external, if the receipt of incentives causes a person's feelings of competence and self-determination to decrease, or if the controlling aspect of the incentives is more salient relative to the informational aspect of the incentives. On the other hand, an enhancement effect will occur if the receipt of incentives causes a person's feelings of competence and self-determination to increase.

Some investigators have experimentally varied interest in the task in order to determine whether high initial interest in the task is necessary for the undermining effect to occur. It has been hypothesized that although the undermining effect would occur for tasks of high initial interest, incentives would enhance intrinsic motivation for initially uninteresting activities. Data pertaining to this hypothesis, however, are inconclusive (Calder and Staw, 1975; Kruglanski et al., 1975; Greene Sternberg, and Lepper, 1976; Daniel and Esser, 1980).

Unlike initial task interest, very few researchers (e.g., Dollinger and Thelen, 1978) have investigated the manner in

which sources of incentives, i.e., subject determined versus experimenter determined, influence the effects of incentives on intrinsic motivation.

The overjustification hypothesis does not directly address itself to the question of how this variable affects intrinsic motivation. One implication of the hypothesis, however, is that the undermining effect would occur for both experimenter determined and subject determined incentives.

Cognitive evaluation theory, on the other hand, is ambiguous with respect to the manner in which variations in sources of incentives would be expected to influence intrinsic motivation. One implication of Deci's theory is that subject determined incentives should be as likely to undermine intrinsic motivation as incentives determined by the experimenter. A contrasting implication of cognitive evaluation theory, however, would predict that subject determined incentives may be less likely to undermine intrinsic motivation than experimenter determined incentives.

The present study was a 2x3 between subjects design. Two levels of task attractiveness (High,Low) were crossed with two levels of sources of incentive (Subject Determined,Experimenter Determined) and a control condition (No Incentive). The dependent measures were latency and duration of self-initiated play assessed during a free period in which incentives were no longer available and the subjects were unaware of being observed.

It was hypothesized that the subjects in the incentive conditions would exhibit less intrinsic motivation during the free period than the subjects in the no incentive control group, thus replicating the undermining effect.

Also predicted was an interaction between task attractiveness and sources of incentive such that intrinsic motivation would be greater for the subjects in the low attractiveness condition who received incentives than for those in the high attractiveness condition who received incentives.

On the basis of Deci's cognitive evaluation theory, the subjects in the subject determined incentive condition were expected to experience more feelings of self-determination compared to the subjects in the experimenter determined incentive condition. Thus, it was predicted that the subjects in the subject determined incentive condition would exhibit less of an undermining effect than subjects in the experimenter determined incentive condition.

The subjects were 31 female and 31 male undergraduates at the University of Connecticut. They volunteered to participate in a purported marketing study for credit in an introductory psychology course. Sixty-five pilot subjects had been run under essentially the same conditions as those in the experimental sample.

In the subject determined and experimenter determined incentive conditions, the subjects were told that a manufacturer had contracted with a professor to study the effects of adding an educational feature (goal-setting) to toys as a marketing attraction.

The subjects rank-ordered the attractiveness of four toys, were assigned to play with one of these toys for three five-minute periods, and then were surreptitiously observed for eight minutes during the experimenter's absence.

One-half of the subjects were randomly assigned to play with the particular toy they had ranked as most attractive (High Attractiveness) and one-half were randomly assigned to play with the particular toy they had ranked least attractive (Low Attractiveness).

One-third of the subjects were instructed to decide how much they should pay themselves for their achievement during the three five-minute play periods (Subject Determined Incentive), while one-third of the subjects were paid a matching amount of money according to achievement of goals set by the experimenter (Experimenter Determined Incentive). No mention of money was made to the remaining third of the subjects (No Incentive).

A semantic differential measure revealed that the highly attractive task was perceived to be significantly more

attractive than the less attractive task ($p<.0001$), indicating that the task attractiveness manipulation was indeed successful.

Results showed that the subjects who received incentives, regardless of source, initiated play earlier ($p<.05$) and tended to play longer ($p<.14$) than did the subjects who received no incentives; therefore an enhancement effect rather than an undermining effect of incentives was found. Results from the 65 pilot subjects mentioned earlier corroborate this finding. Specifically, the subjects in the pilot sample who received incentives, regardless of source, initiated play earlier ($p<.01$) and played longer ($p<.05$) than did the subjects in the control condition.

Play was initiated earlier by the subjects in the high attractiveness condition than by the subjects in the low attractiveness condition ($p<.05$); therefore there was no interaction between task attractiveness and source of incentives.

Contrary to expectations, then, the results showed that the receipt of incentives enhanced the subjects' intrinsic motivation, regardless of whether the incentive was subject determined or experimenter determined.

Additionally, intrinsic motivation was found to be greater for subjects who played with a highly attractive task than for those who played with a less attractive task.

Neither the overjustification hypothesis nor cognitive evaluation theory can adequately account for the uniform enhancement effect found in this study. However, both the enhancement effect found in the present experiment as well as the undermining effect obtained by other researchers may be explained by consideration of subjects' perceptions of success.

The receipt of incentives for task performance provides information to the recipient about his degree of success at a task. If an individual believes that he can earn a given amount of incentive contingent upon task performance, and subsequently receives the maximum amount possible, he is likely to infer that he has achieved success at the task and that the possibility of achieving greater success is unlikely. This individual would therefore have little motivation to spontaneously resume the task. In this regard, Lewin et al. (1944) hypothesized that there is a tendancy to stop a task when the possibilities of achieving greater success are not good.

On the other hand, if an individual receives an amount of incentive for task performance that is somewhat less than the amount he believes he could have received, but is more than the minimum amount possible, he might well infer that he has not yet succeeded, and that there are continued prospects for success. This individual would be more motivated

tc spontanecusly resume the task than would the individual in the former case.

In the intrinsic motivation studies which found an undermining effect, the subjects in incentive conditions knew prior tc task performance how much incentive was available, and then received the maximum possible amcunt of incentive subsequent to task performance. These subjects were likely tc infer that they had achieved success at the task. Additionally, they were likely to infer that, since they had achieved a complete success, the probability of achieving greater success was minimal. The receipt cf the maximum pcssible amcunt cf incentive made salient tc these subjects the perceptions of success and minimal probability for greater success.

The subjects whc received no mcney, hcwever, had nc objective standard with which to evaluate whether cr not they had succeeded. These subjects, then, were less likely tc perceive themselves as having succeeded than were the subjects whc received the incentive. The undermining effect wculd, therefcre, have cccurred because first, the subjects who received the maximum possible amount of incentive had no reason to prove to themselves that they could succeed since they had already succeeded. Secondly, the probability of achieving greater success was unlikely.

In the present study, the subjects in the experimenter determined incentive condition also knew prior to task performance how much incentive was available. That is, prior to the start of the first trial, the subjects in incentive conditions were given 75 cents. In addition, a kitty consisting of another 75 cents was placed in front of the subjects before each of the three trials. After each trial, the subjects received some amount of money from the kitty based upon goal achievement. Most of the subjects in this condition, however, were actually paid less than the three dollar maximum (i.e., mean amount paid = 95 cents).

Since the subjects who received incentives were not paid the maximum possible amount of money, they were likely to perceive that they had not succeeded at the task. They received, however, more than the minimum amount possible (no money), and were therefore likely to infer that the probability of achieving greater success was good. These subjects may have been motivated to play with the task during the free play period in order to show themselves they could succeed. The subjects in the no incentive control condition had no basis for evaluating their performance, and consequently had no perception of success or lack of success. These subjects would have had less reason to continue to play than would the subjects who had some basis for inferring that they had been partly successful.

It appears, then, that subjects' perceptions of success may mediate the effects of incentives on intrinsic motivation. Specifically, the perception of success hypothesis states that if subjects perceive that they have achieved complete success at a task, they will be less motivated to continue performing the task because they have no reason to prove to themselves that they can succeed and because their probability of achieving greater success is low. On the other hand, if subjects perceive that they have not achieved complete success at a task and that the probability of achieving greater success is high, there will be greater motivation to continue performing the task.

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